REMARKS

Favorable consideration of this Application as presently amended and in light of the following discussion is respectfully requested.

After entry of the foregoing Amendment, Claims 1-13 are pending in the present Application. Claims 1-5, 7-10, 12, and 13 have been amended to address cosmetic matters of form. Support for the amendment of Claim 1 can be found at least at Fig. 1 of the specification. No new matter has been added.

By way of summary, the Official Action presents the following issues: Claims 1-10 stand rejected under 35 U.S.C. § 101 allegedly being directed toward non-statutory subject matter; and, Claims 1-6 and 9-13 stand rejected under 35 U.S.C. § 102 as being anticipated by Acero et al. (U.S. Patent No. 5,604,839, hereinafter Acero).

REJECTION UNDER 35 U.S.C. § 101

The outstanding Official Action has rejected Claims 1-10 under 35 U.S.C. § 101 allegedly being directed toward non-statutory subject matter. Applicant respectfully traverses the rejection.

With regard to Claims 1-10, MPEP § 2106 provides that:

> Office personnel have the burden to establish a *prima facie* case that the claimed invention as a whole is directed to solely an abstract idea or to manipulation of abstract ideas or does not produce a useful result. Only when the claim is devoid of any limitations to a practical application in a technological arts should it be rejected under 35 U.S.C. § 101 . . . Further, when such a rejection is made, <u>office personnel must expressly state how the language of the claims has been interpreted to support the rejection.</u> (emphasis added) See MPEP § 2106.

The rejection merely includes a conclusory statement, "the claims manipulate an abstract idea ("speech single") or calculate a mathematical problem without producing a

useful, concrete and tangible result."[1] Thus, Applicant respectfully submits that no express

statement has been provided as to how the <u>language of the claims</u> have been interpreted to

support the 35 U.S.C. § 101 rejection in violation of the guidelines of MPEP § 2106.

Accordingly, should such a rejection be maintained in a subsequent communication

with respect to any of the aforementioned claims, Applicant respectfully requests the

Examiner provide an express statement on the record in accordance with MPEP § 2106

guidelines explaining how such claim terminology, such as "input speech signal,"

"preprocessed speech signal," "speech recognition," and "recognition result" is interpreted.

More specifically, how such limitations are deficient to define a practical application in the

technological arts of useful, concrete and tangible result. See <u>State Street Bank & Trust Co.

v. Signature Financial Group, Inc.</u>, 149 F.3d 1368, 1374, 47 (Fed. Cir. 1998) (discussing

practical application of a mathematical algorithm, formula, or calculation.).

Accordingly, Applicant respectfully requests that the rejection of Claims 1-10 under

35 U.S.C. § 101 be withdrawn.

<div align="center">REJECTION UNDER 35 U.S.C. § 102</div>

The outstanding Official Action has rejected Claims 1-6 and 9-13 under 35 U.S.C. §

102 as being anticipated by <u>Acero</u>. Applicant respectfully traverses the rejection.

By way of background, speech recognition typically includes a three-step process of

inputting a speech signal to a speech recognition system, preprocessing the speech signal, and

recognizing the speech based upon the received speech signal. In such systems, the speech

recognition rate may be affected based upon the preprocessing steps performed.[2]

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[1] Office Action at para. 1
[2] Application at page 1.

With at least the above deficiencies in mind, the present invention is provided. With

at least the above object in mind, a brief comparison of the claimed invention, in view of the

cited reference, is believed to be in order.

Applicant's amended Claim 1 recites, *inter alia*, a method for recognizing speech,

including:

> . . . wherein in said preprocessing, a step of performing a variance
> normalization is applicable to the received speech signal, said
> preprocessing includes:
> performing a statistical analysis of said speech signal, thereby
> generating and providing statistical evaluation data,
> generating a normalization degree data from said statistical
> evaluation data, and
> performing said variance normalization on said speech signal in
> accordance with said normalization degree data – in particular with a
> normalization strength corresponding to said normalization degree data,
> with normalization strength corresponding to said normalization degree
> data with normalization degree data having a value or values being 0 with
> respect to a given threshold value indicating that no variance
> normalization has to be performed. (emphasis added)

Acero describes a system and associated method of improving speech recognition

through front-end normalization of feature vectors. As shown in Fig. 1, a speech recognition

system (10) is provided to include an input device (12), an amplifier (14) for amplifying the

signal of the input device, and an analog-to-digital converter (16) for digitizing the amplified

signal.[3] The digitized signal is provided to a feature extractor (20) that extracts certain

features from the signal in the form of feature vectors. The feature extractor (20) breaks

down the digital signal of the a/deconverter into frames of speech; and, then, extracts a

feature vector from each of the frames. The feature vector extracted from each from of

speech comprises cepstral vectors. The feature vector is then provided to a normalizer (22)

for normalizing the vector. The normalizer is then used in conjunction with a pattern matcher

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[3] Acero at Fig. 1; column 3, lines 16-23.

(24) to compare the normalized vector to feature models stored in a database (26) for recognizing speech elements.[4]

Conversely, in an exemplary embodiment of the Applicant's invention, a speech recognition method is provided, in which <u>an input speech signal</u> is preprocessed in order to generate a preprocessed speech signal. The preprocessing includes performing a variance normalization on the received speech signal, which includes performing a statistical analysis of the speech signal and generating a statistical evaluation data based on the analysis. Normalization degree data is generated from the statistical evaluation data. In this manner, the variance normalization is performed in accordance with the normalization degree data based upon normalization strength having a value, or values, being 0 with respect to a given threshold value. <u>Acero</u> merely describes improving speech recognition through front-end normalization of feature vectors (i.e., portions of speech data). In other words, feature vectors are collected based on the probability of a current speech frame being noise-based. These feature vectors are derived from a speech signal. <u>Acero</u> does not disclose, or suggest, a speech signal preprocessing, including performing a statistical analysis <u>of the speech signal</u> to generate a statistical evaluation data, generating normalization degree data from the statistical evaluation data, and performing variance normalization <u>on the speech signal</u> in accordance with the normalization degree data, as recited in amended Claim 1.

Accordingly, Applicant respectfully requests that the rejection of Claims 1-6 and 9-13 under 35 U.S.C. § 102 be withdrawn.
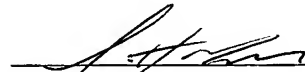
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[4] <u>Acero</u> at column 3, lines 40-55.

CONCLUSION

Consequently, in view of the foregoing amendment and remarks, it is respectfully

submitted that the present Application, including Claims 1-13, is patently distinguished over

the prior art, in condition for allowance, and such action is respectfully requested at an early

date.

Respectfully submitted,

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